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the interior is warmer than the exterior, it will certainly harm the seeing. In fact my latest experiments show that any dome at all is harmful. A sunshade surrounding the tube would be better both night and day.

A fifth cause of failure, and by no means the least important, is the lack of continuity of observations and the lack of a first good view. By the first I mean fair or good observations made many days in succession. For instance if the seeing is only fair it requires the work of several nights in succession, without intervals, to identify with certainty the longitude presented by a satellite of *Jupiter*. By a "first good view" I mean the necessity of one first-class observation before one understands what is sought. After that view the observer can obtain valuable results under conditions in which formerly he failed completely from ignorance of what he was after. It is the same in observing the *Gegenschein*. I have taught many persons to observe it, and I find that teaching consists in getting them to see it well once. After that they can be trusted to pick it out with very small liability to error. This, of course, is most true in atmospheres unclouded by smoke and unlighted by electricity.

No matter how difficult to obtain, a just hearing is our right. No one is entitled to cry out against us until he can show that his atmosphere is approximately as good as the one through which Mr. Lowell discovered these markings. Let our dubious friends, who attempt to show that we as well as they are deluded, devote a portion of their valuable time to work at the telescope under better atmospheric conditions, and no one will misunderstand the silence which will follow.

Lowell Observatory, Flagstaff, Arizona :
1898 *April* 26.

Micrometrical Measures of the Double Stars β 883, *Sirius and Procyon.* By T. J. J. See, A.M., Ph.D. (Berlin).

During the past season we have kept watch on the movements of *β* 883, and have taken occasion to measure the systems of *Sirius* and *Procyon*, which require very steady definition and of course a powerful telescope. When we first examined *β* 883 in 1897 August it was evident that no great change had taken place since our last measures in Mexico, and our subsequent observations confirm the slow motion of the companion during the past year. We have just measured these systems, and as they will soon disappear in the west, I submit at this time the results at which we have arrived. Each measure is the mean of three settings of the micrometer.

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β 883.

t	θ_0	ρ_0	Remarks.
		″	
1897·622	38·6	0·25	Closer than at Mexico.
1897·832	36·1	0·36	Clearly divided with black line between components; power 1,500, and great care for angle in last measure.
·832	37·5	0·34	
·832	39·4	0·33	
1898·263	42·3	0·29	Excellent conditions.
·263	42·3	0·23	
·263	45·4	0·27	
·263	43·2	0·27	
1897·622	37·9	0·28	Cogshall.
1897·832	45·7	0·31	Boothroyd.
1898·263	42·9	0·31	„

These measures show that the angle has not changed more than 6° or 8° during the past year, and it appears that the distance is nearly constant. As the system from 1894 to 1895 moved over an arc of something like 25°, the present result would indicate a longer radius vector, which is also apparent in the measures of distance; the provisional orbit published in *Monthly Notices*, 1897 May is thus in accord with these observations; but at least another year must pass before we can form a trustworthy conclusion as to the character of the orbit. These results, however, distinctly indicate great elongation of the apparent orbit in the parts of the first quadrant now being described. The star separates with a power of only 500 on the 24-inch refractor, and is thus easily measured. In about another year I suspect that the distance will be greatly diminished, and then the angular motion will become very rapid.

Sirius = *A. G. C.* 1.

Besides the measures published in *Astronomical Journal*, No. 418, the following have just been secured :—

t	θ_0	ρ_0	Remarks.
		″	
1898·263	169·6	4·84	Companion fairly distinct, but a little obscured by the rays of the large star.
·263	167·2	4·43	
·263	169·1	4·50	
·263	168·6	5·02	
1898·269	170·1	5·06	
·269	167·2	4·84	
1898·296	169·6	4·71	
·296	170·0	4·76	
1898·273	168·9	4·79	
1898·263	169·1	4·36	Boothroyd.
·269	170·9	4·97	„
·296	172·2	5·26	„
1898·273	170·7	4·86	

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The motion appears to accord almost perfectly with the orbit given in the *Researches on the Evolution of the Stellar Systems*, vol. i. p. 84, and it is hardly likely that the companion will ever deviate materially from the path there given.

Procyon = Bessel-Schaeberle 1.

t	θ_0	ρ_0	Remarks.
1897·829	329·4	4″·80	About as difficult as companion of Sirius.
1898·263	326·6	4·36	
·263	326·0	4·41	
1898·296	324·6	4·68	Beautifully separated for some moments, companion distinctly purple.
·296	327·3	4·62	
1898·189	326·6	4·57	
1897·829	328·6	4·82	Boothroyd.
1898·263	324·0	4·48	„
1898·296	328·5	5·04	„
1898·129	327·0	4·78	

The first of these measures was made in the autumn just before we issued the catalogue of new stars, and is therefore appended to the measures of known stars communicated to the *Astronomische Nachrichten.*

The measures on the last night (April 19) were extremely satisfactory, and unquestionably indicate orbital motion since Schaeberle's discovery a year and a half ago. As the companion is distinctly purple, the appearance of the system would indicate physical connection. There can no longer be any doubt, I think, that this is the perturbing body suspected by Bessel from irregularities in the proper motion of the bright star. A refined investigation of all the meridian observations of the past fifty years, or a revision and extension of the work of Auwers in connection with recent micrometer measures, would be highly interesting. The present results, combined with Professor Schaeberle's early measures, indicate an annual motion of nearly 6°. This object, like the companion of *η Centauri*=λ_1 207, is easy when the seeing is very steady, but at other times is hopelessly lost in the rays of the large star. The companion is of about 13th magnitude, and would offer no particular difficulty save for its closeness to *Procyon.*

Lowell Observatory, Flagstaff, Arizona:
1898 *April* 22.

The Relative Motion of the Components of γ Leonis. By S. W. Burnham.

As a double star this is one of the most brilliant objects in the heavens, and, as it is within the reach of the smallest telescopes, it has received the attention of all the leading observers